

# Penile Fracture in Southern Nigeria: A 10-Year Review in Two Tertiary Referral Centers

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## Abstract

**Background:** Penile fracture is an uncommon genitourinary emergency due to an abrupt trauma to an erect penis. Urgent exploration and repair of tunica albuginea tear is advocated. This study aimed to assess the etiology, presentation, location of the tear, and management outcome of penile fracture in two tertiary hospitals in southern Nigeria. **Patients and Methods:** Data were obtained retrospectively from the patients' health records in the two tertiary hospitals from April 2009 to March 2019. Their biodata, mechanism of injury, injury-to-presentation time, clinical features, location of the injury, the treatment offered, duration of hospital admission, and follow-up were studied. **Results:** Thirteen patients aged 22–54 years (mean 34.0 years) were treated within the 10-year study period. Ten (76.9%) had tertiary education, while 7 (53.8%) were married. Heterosexual intercourse accounted for penile fracture in 12 (92.3%) patients while rolling over an erect penis in bed in 1 (7.7%) case. Male-dominant sex position ( $n = 9$ ; 69.2%) was the most predominant. In 8 (61.5%) patients, girlfriends/mistresses were involved. Most patients ( $n = 9$ ; 69.2%) presented within 24 h, while one came after 7 days. All patients presented with penile pain, crackling sound, sudden detumescence, swelling, and penile deformity. The left corpus cavernosum was affected in 9 (69.2%) patients. Three patients (23.1%) had associated urethral injuries. All patients had surgical exploration and repair with minimal complications. Average hospital admission and follow-up duration were 6.7 days and 9.3 months, respectively. **Conclusion:** Heterosexual intercourse was the predominant cause of penile fracture in our study. Surgical management gave excellent outcomes even in delayed presentation.

**Keywords:** Erect penis, penile fracture, Southern Nigeria, surgical repair, urethral injury

## INTRODUCTION

Penile fracture is a rare male genitourinary condition characterized by a tear in the tunica albuginea of an erect penis as a result of blunt trauma. Occasionally, there may be a concomitant injury to the corpus spongiosum and the urethra.<sup>[1]</sup> The patients are typically young and sexually active.<sup>[2]</sup> The etiology varies from vaginal intercourse, penile manipulations during masturbation to rolling over an erect penis.<sup>[1]</sup> It is often underreported due to the associated shame and embarrassment.<sup>[3]</sup>

The diagnosis of penile fracture is predominantly clinical.<sup>[4]</sup> To this end, some scholars opined that the management of a penile fracture should progress immediately to surgical exploration after clinical evaluation to avoid the delay associated with diagnostic investigations.<sup>[5]</sup> Expedient surgery obviates the untoward complications associated with conservative management.<sup>[1,6]</sup>

This study aimed to determine the etiology, clinical presentation, location of tear, management outcome, and rate of complication of penile fractures in two tertiary hospitals in southern Nigeria over a period of 10 years.

## PATIENTS AND METHODS

The medical files of all patients with a diagnosis of penile fracture who were managed with penile exploration and repair of corporal tear by the urology divisions of the two tertiary hospitals over a 10-year period (between April 2009 and March 2019)

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were retrieved from the health information department. Consent was also obtained from patients whose clinical photographs were used. Data pertaining to their sociodemographic characteristics, etiology of injury, clinical features, intraoperative findings, immediate postoperative period, and complications during follow-up were documented. A pro forma was used to collect the data. Data analysis was done using simple statistics and Statistical Programming for Social Sciences version 21 (SPSS Inc., Chicago, IL, United States).

## RESULTS

During the 10-year study period, 13 patients were managed for penile fracture in the two hospitals. The patients' age ranged from 22 to 54 years (mean:  $34.0 \pm 8.2$  years). The time interval between trauma and hospital admission varied from 1 to 168 h (mean:  $29.31 \pm 46.15$  h). The majority of the patients were married civil servants with a tertiary level of education who engaged in extramarital sexual intercourse, as depicted in Table 1.

Sexual trauma was the main etiological factor, accounting for 12 cases (92.3%). For nonsexual injury mechanisms, we found rolling in bed in one case (7.7%). Of the 12 cases which were due to sexual intercourse, 3 (23.1%) cases occurred with the knee–elbow position, 9 (69.2%) with male-dominant position.

The majority (61.6%) of the patients presented within 12 h of injury. However, one came to the hospital after 7 days due to a lack of improvement of symptoms following the use of herbal concoctions, as shown in Table 2.

All patients had severe sharp pain, a snappy sound, sudden detumescence, penile deformity, and swelling following the injury. Three (23.1%) patients had bleeding per urethra, while acute urinary retention occurred in 1 (7.7%). All patients with urethral bleeding or acute urinary retention had some degree of urethral injury. Table 3 shows the etiology, sex position, and the presenting symptoms of the patients.

The diagnosis of penile fracture was clinical in all patients without the need for additional investigations. Unilateral injuries of the corpus cavernosum were found in 12 patients (92.3%) ranging from a diameter of 0.3–2.0 cm. Bilateral albuginea tears of about 3.5 cm and 0.5 cm were identified in the left and right corpora cavernosa, respectively, in 1 (7.7%) patient. The urethral injury was observed in 3 cases (23.1%). All patients had urethral catheter passed intraoperatively and were removed after 3 to 5 days except for the three patients with a urethral injury who had theirs extended. Ciprofloxacin was given to all patients for 3 to 5 days. All patients had erection within 7 days after surgery.

Most of the patients (76.9%) were discharged within 7 days of admission. Two of the three patients who had urethral injury were admitted for 8 and 10 days. The third patient had concomitant acute urinary retention and was relieved during the surgical repair of the corporal tear. This patient was hospitalized for 21 days and eventually developed urethral stricture. The follow-up duration ranges from 1 to 24 months, with a mean of 9.3 months.

**Table 1: Sociodemographic characteristics of patients**

Variables	Variable subdivisions	Frequency (%)
Age group (years)	20-30	3 (23.1)
	31-40	8 (61.5)
	>40	2 (15.4)
Highest level of education	Secondary	3 (23.1)
	Tertiary	10 (76.9)
Occupation	Civil servant	7 (53.8)
	Business	4 (30.8)
	Students	2 (15.4)
Marital status	Single	6 (46.2)
	Married	7 (53.8)
Partner	Wife	3 (25.0)
	Girlfriend/mistress	8 (61.5)
	Commercial sex worker	1 (7.7)
	Not applicable (trauma)	1 (7.7)

**Table 2: Injury-to-presentation time of the patients**

Injury-to-presentation time (h)	Frequency (%)
0-5	4 (30.8)
6-12	4 (30.8)
12-24	1 (7.7)
24-48	2 (15.4)
48-120	1 (7.7)
>120	1 (7.7)
Total	13 (100.0)

**Table 3: Clinical data of patients**

Variables	Variable subdivisions	Frequency (%)
Aetiology	Sexual intercourse	12 (92.3)
	Trauma (nonsexual)	1 (7.7)
Sex position	Male dominant/missionary	9 (69.2)
	Knee-elbow	3 (23.1)
	Not applicable (trauma)	1 (7.7)
Presenting symptoms	Crackling sound	13 (100)
	Severe pain	13 (100)
	Immediate detumescence	13 (100)
	Penile swelling	13 (100)
	Penile deformity	13 (100)
	Urinary retention	1 (7.7)
Urethral bleeding	3 (23.1)	

The complications noted during the immediate postoperative period and during follow-up visit are shown in Table 4. The patient who had urethral stricture diagnosed 6 months after surgery eventually had substitution urethroplasty with buccal mucosa graft. The patient who complained of mild painful erection 4 months after surgery, especially during sexual intercourse was lost to follow-up after 11 months. No patient had erectile dysfunction in the period of follow-up.

## DISCUSSION

Penile fracture is somewhat a rare type of blunt genital trauma with an increasing incidence in recent times.<sup>[7]</sup> The finding of

13 patients over a 10-year period from two tertiary centers indicate that it may still be rare in the Niger Delta region of Nigeria. This finding is in line with those of Oranusi and Nwofor<sup>[8]</sup> in south-eastern Nigeria, Ugwu *et al.*<sup>[3]</sup> in North central Nigeria and south-western Nigeria.<sup>[9]</sup> This rare nature of penile fracture has been hinged on underreporting due to social embarrassment and cultural restrictions.<sup>[1,3]</sup> However, Salako *et al.*<sup>[7]</sup> in 2018 observed an increase in the incidence of penile fracture when they reported six cases over a 2-year period in southwestern Nigeria. This attributed to a probable improvement in the health-seeking habit in recent times in that locality.

The average age of 34 years in this study buttresses the general opinion that penile fracture is conventionally a pathology of young adults. This is attributed to the fact that this age bracket is predominantly sexually active, with adventurous sexual leanings and an increased propensity to utilize performance-enhancing drugs.<sup>[7,10]</sup> However, any age group can be affected, as noted by Eke.<sup>[1]</sup>

The etiology of penile fracture differs with culture and geographical location. While vaginal intercourse is predominant in the Western world<sup>[1]</sup>, noncoital causes like masturbation and penile manipulation have been reported to be the principal etiology in the Middle East.<sup>[1,11]</sup> This towering incidence of the noncoital mechanism of penile fracture in the Eastern Hemisphere has been ascribed to the characteristic tradition in the area which entails vigorous twisting of the engorged penis to achieve detumescence.<sup>[10,11]</sup> Vaginal intercourse was the chief cause of penile fracture noted in this study accounting for 12 (92.3%) of the 13 cases. This is consistent with observations from related works in our immediate environment<sup>[8,12,13]</sup> as well as the Western Hemisphere.<sup>[1,6,14]</sup> Nevertheless, this finding is at variance with that of Salako *et al.*<sup>[7]</sup> who reported noncoital mechanism as the principal etiology in their work.

More than half (61.8%) of our patients reported to the hospital comparably early, a probable indicator of improving health-seeking behaviors and increasing faith in orthodox medicine. This observation is contrary to the report of Agbugui *et al.*<sup>[13]</sup> who noted a general delay in presentation with a mean interval of 22 h in the same locality 7 years earlier. One of our patients, however, presented to the hospital after 7 days of unsuccessful treatment by traditional medicine practitioners.

Despite this delay of 7 days before presentation, we did not observe any complication in the 24-month follow-up period. This buttresses the fact that surgical treatment should be offered to all patients despite the time of presentation.

Penile fracture is usually diagnosed clinically. With a characteristic history and distinctive physical examination findings, patients scarcely require radiographic investigations.<sup>[1,7,11,15]</sup> All our patients had a history of a popping sound and immediate detumescence followed by severe pain, penile swelling, and attendant “egg-plant” deformity [Figure 1].

In addition, the physical examination findings in these patients were highly suggestive of penile fracture, so we proceeded immediately to surgical exploration. A history of urethral bleeding or inability to micturate, as seen in three patients in this study, is an indicator of urethral injury and may be confirmed by retrograde urethrography. Many authors, however, consider this unnecessary as it is believed to contribute to delay in surgical intervention time.<sup>[1,7,13]</sup> Radiological investigations such as Doppler ultrasonography, cavernosography, or magnetic resonance imaging may also be indicated in some atypical cases.<sup>[1,11,16]</sup> It is noteworthy, however, to consider deep dorsal vein rupture as a differential diagnosis particularly in patients with penile deformity and pain but devoid of the typical crackling sound.<sup>[1]</sup>

There has been a paradigm shift in the treatment of penile fracture over the years. Initial studies prescribed conservative management which entails bed rest, ice packing, compressive penile dressing, urethral catheterization, use of anti-inflammatory agents, and antibiotics together with diazepam to suppress erection.<sup>[17]</sup> Nonetheless, these nonsurgical steps are frothed with poor erections, permanent deformity, and a longer hospital stay. On the other hand, the presently favored surgical approach offers a very good outcome, reduces hospitalization time, minimizes morbidity, and enhances early resumption of sexual activity.<sup>[1,11]</sup> All

**Table 4: Intraoperative findings and complications**

Variable	Subdivisions	Frequency (%)
Location of injury	Right corpus carvenosum	4 (30.8)
	Left corpus carvenosum	9 (69.2)
Site of tear	Proximal corpora	8 (61.7)
	Mid corpora	4 (30.8)
	Distal corpora	1 (7.7)
Mode of urine diversion	Urethral	11 (84.6)
	Urethral/suprapubic	2 (15.4)
Complications	Urethral stricture	1 (7.7)
	Mild painful erection	1 (7.7)



**Figure 1:** Showing picture of penile fracture with “egg-plant” deformity and bleeding per urethra (referred from a private health facility with catheter *in situ*)

patients in this study had immediate surgical exploration and repair of the corporal tear.

Various incisions have been utilized for penile exploration in patients with penile fractures. These include circumferential subcoronal, local longitudinal, inguinoscrotal, and midline penoscrotal incisions.<sup>[11,16,18]</sup> Of these, the circumferential subcoronal degloving incision has clinched a wide acceptance among many urological surgeons.<sup>[3,7,8,12]</sup> Subcoronal incision offers good access for degloving and is cosmetically attractive.<sup>[13]</sup> This was used for all our patients with outstanding outcomes. This involves degloving of the penis, evacuation of clots at the rupture site, [Figure 2] and repairing of the tunica albuginea tear. Numerous studies have revealed the same excellent outcome with this operative method.<sup>[12,13,19]</sup>

Rupture of the tunica albuginea is often unilateral and transverse involving, in most instances, the proximal penile shaft which is an area with a physiological penile curve and poor structural architecture.<sup>[20]</sup> Although uncommon, bilateral tears as well as oblique tears have been reported in patients with penile fracture.<sup>[1,11]</sup> In our study, the left corpus cavernosum was more affected (69.2%) compared to the right (30.8%). In addition, the proximal corpora were affected in 61.7% of patients in this study [Table 4].

In this study, 23.1% of the patients had associated urethral injury. This prevalence compares favorably with those of other similar studies reviewed by Eke<sup>[1]</sup> and Zargooshi.<sup>[11]</sup> Salako *et al.*<sup>[7]</sup> and Agbugui *et al.*,<sup>[13]</sup> however, reported no urethral injuries in their series. All repairs were done with a urethral catheter *in situ* as it enhances proper alignment and diverts urine [Figure 3]. Furthermore, urinary diversion through a suprapubic cystostomy may be necessary to protect urethral repairs in patients with urethral rupture as noted in one of our patients.

The ruptured tunica albuginea in this series was repaired with synthetic absorbable sutures [Figure 4]. Using nonabsorbable sutures in the repair of corporal tears may result in a painful palpable knot.<sup>[21]</sup>

The operative treatment of the fractured penis has many attendant complications ranging from penile curvature, penile nodules, erectile dysfunction to depression, and marital disharmony.<sup>[1,11,12,19]</sup> In our study, one patient had a mild painful erection, while one of the three patients that had a urethral injury developed urethral stricture after 6 months of follow-up and subsequently had urethroplasty.

The mean follow-up period in this study was 9.31 months (range: 1–24 months). Some patients, however, defaulted clinic follow-up after establishing good penile function. Agbugui *et al.*<sup>[13]</sup> noted in their study, while reporting a mean follow-up period of 9.3 weeks, that this default may be due to a good recovery of sexual functions which is the expected benchmark for the majority of these young patients. A longer duration of follow-up may have availed us the opportunity of observing more long-term complications. Another limitation is the small

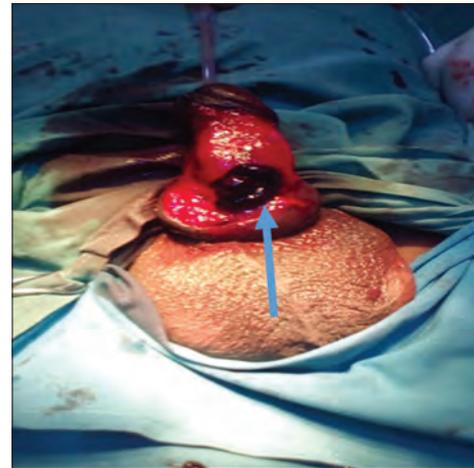


Figure 2: A degloved penis showing hematoma at the fracture site

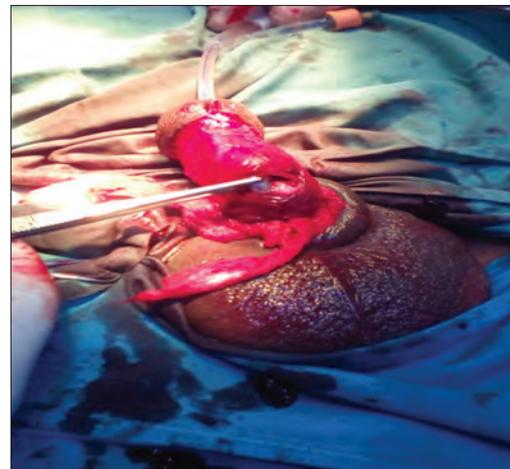


Figure 3: Penile fracture with urethral injury

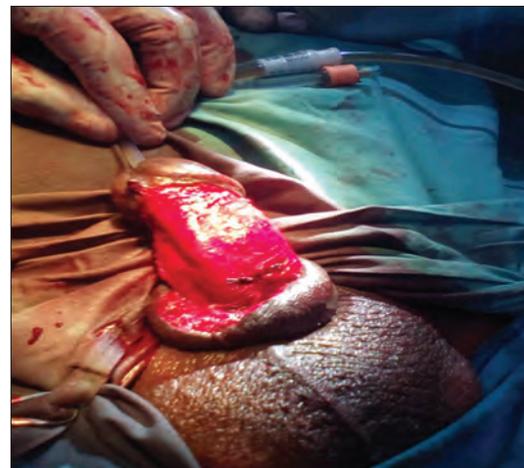


Figure 4: The corpora tear repaired

number of cases in this study. All in all, there may be a need for a prospective multicenter study involving a larger number of patients to ascertain the prevalence of long-term complications in our region.



**Figure 5:** Good esthetic outcome 2 weeks after

## CONCLUSION

Penile fracture remains a rare male genitourinary emergency with classical clinical presentation. In these typical cases, imaging investigations only prolong the intervention time. The predominant etiological factor in southern Nigeria is sexual intercourse. With minimal complication rate despite the duration of injury-to-presentation time, surgical exploration with the repair of albugineal tear offers satisfactory outcomes [Figure 5].

## Declaration of patient consent

The authors certify that they have gotten all necessary patient consent forms. In the form, the patients have given their permission for their clinical photographs and information to be reported in the journal. The patients understand that their names will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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